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ABSTRACT

A study was conducted to describe change (and lack of change) in instructional processes and teacher and student behavior when class size was reduced by one-third midway through the school year. Two second grade classes from two schools participated; one school was in rural Virginia, the other an inner-city school in California. Information was collected through observation, teacher journals, and interviews, and teachers and researchers collaborated throughout the study. General patterns of change occurred when class size was reduced. Teachers reported that classroom management seemed easier and more effective. There was also evidence that classes functioned more smoothly, student attention rates were generally higher, and there were fewer absences. The teachers welcomed the opportunity for greater individualization of instruction. Changes in curriculum also occurred, most in the form of enrichment activities such as more instructional games, reading for pleasure, and field trips. Within the basic reading and mathematics curriculum, some teachers found that students completed lessons and progressed through the curriculum more quickly. Other teachers developed lessons in greater depth. While the teachers expressed a sense of greater freedom from the constraints imposed by a large class and increased enthusiasm, it appeared that easing these constraints allowed the teachers to do what they were already inclined to do in a better fashion. Most of the changes could be described as modifications or improvements within the teachers' existing styles and plans of instruction. (JD)

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Class Size and Instruction Project

WHAT HAPPENS IN SMALLER CLASSES?

A Summary Report
of a Field Study

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From the Class Size and Instruction Project:

Meta-Analysis of Research on the Relationship of Class-Size and Achievement by Gene V Glass and Mary Lee Smith, is available through the Order Department, Far West Laboratory for Educational Research and Development, 1855 Folsom Street, San Francisco, CA 94103. The price (prepaid) is $5.50 (First Class: $7.00).

Relationship of Class-Size to Classroom Processes, Teacher Satisfaction and Pupil Affect: A Meta-Analysis by Mary Lee Smith and Gene V Glass, is available through the Order Department of Far West Laboratory. The price (prepaid) is $5.50 (First Class: $7.00).

Complimentary reprints of the March 1979 Phi Delta Kappan article, "The Class Size/Achievement Issue: New Evidence and a Research Plan" by Leonard S. Cahen and Nikola N. Filby, are available by request. Write: Class Size and Instruction Project, 1855 Folsom Street, San Francisco, CA 94103

WHAT HAPPENS

IN

SMALLER CLASSES?

A Summary Report

of a Field Study

by

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January, 1980

Preface

This report summarizes a field study of class size effects carried out by the Class Size and Instruction Project during the 1978-79 school year. The study was a collaborative effort involving researchers and teachers in two different sites--one in California and one in Virginia. The purpose of the study was to describe changes (and lack of changes) in instructional processes, teacher and student behavior when class size was reduced by one-third midway through the school year. A more detailed report of the study, including case studies descriptions of each of the classes, is being prepared for publication.

We gratefully acknowledge the contributions of a number of other people to this research effort. Dr. Robert Moore, of San Francisco State University, was a major field observer and team member at the California site. Dr. Dorene Ross and Ann Ewing assisted with data collection. Dr. Pam Buckley assisted with analysis and writing. The Teachers Center Exchange project at the Laboratory and Amity Buxton of the Oakland center helped us locate a field site. The Advisory Board for our Project reviewed and critiqued both the plan for the study and preliminary case study writing, as did a number of other colleagues. These reviews sharpened both our thinking and our writing. Finally, an essential ingredient was the participation of teachers, staff and students at the two schools. We hope they have felt like part of a team investigating a question of common interest; we appreciate the openness required of them to invite us into their classrooms and share with us the difficulties and frustrations of teaching. Research standards of confidentiality prevent our acknowledging them by name, although we hope we can envision a day when collaborative research will allow everyone to share in all phases of the effort, including acknowledgement.

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January, 1980

Table of Contents

Preface i

Introduction 1

Methodology 5

- Design and Sample 5
- Assignment of Students to the New Class 6
- Collecting Information 6
- Collaboration with Teachers 7
- Analysis and Reporting 7

Results 9

- Classroom Management 9
- Curriculum 11
- Individualization 13
- Teacher Reactions 14

Discussion 15

Footnotes 18

References 19

Introduction

For years educators have been concerned with the issue of class size. Many people believe strongly that smaller classes are better, that they provide a higher quality educational environment and that they promote greater student learning. Many teachers hold this belief. In a synthesis of class size studies, Smith and Glass (1979) found a strong relationship between class size and teacher job satisfaction. When the National Education Association conducted a nationwide teacher opinion poll in 1979, research on class size was rated a top priority. Many parents also share a belief in the value of smaller classes. A Gallop poll asked parents whether they thought it would make "a great deal of difference," "little difference" or "no difference" to achievement whether a student were in a class of 20 or a class of 35. Over 80 percent of parents felt it would make a great deal of difference.

Research on class size has not always produced clear-cut results. Many studies have investigated the relationship between class size and student achievement. Some studies found statistically significant effects favoring smaller classes; others did not.

This literature has recently been synthesized by Glass and Smith (1978) using "meta-analysis" techniques.[1] In meta-analysis, the summary data from existing studies become input data points for a new statistical analysis across all studies. From each comparison of achievement in two class sizes, a standardized measure of achievement difference was calculated. These achievement difference scores were then analyzed using regression techniques. The results showed that, on the average, achievement can be expected to increase when class size is reduced. Dramatic increases in achievement only occur, however, when class size is reduced to 15 or smaller.

These results support the position that greater learning often takes place in a small class. They also highlight the fact that smaller is not always better. Some teachers in particular situations promote greater learning than do others. Some teachers apparently exploit the potential of a small class more than others.

In order to understand the effects of class size more fully it is essential to examine what goes on in the classroom, i.e. the nature of instructional processes as they are influenced by class size. Class size cannot by itself influence learning. Rather, it is one of the conditions within which the teacher plans and implements instruction. Presumably some kinds of instruction are more feasible in a small class, and these instructional techniques/activities lead to greater student learning.

Knowledge about instructional process variables can come from two sources--studies of class size and general studies of effective teaching. Several studies of class size and instructional processes

have been done, although less attention has been given to process variables than to student achievement.

A major source of studies about class size and classroom processes is Teachers College, Columbia University, and the associated Institute of Administrative Research. Studies involving class size were carried out there by Newell (1943), McKenna (1955), Richmond (1955), Coble (1968) and Olson (1970). The later work used as a measure of classroom processes an observation instrument called "Indicators of Quality" (IOQ) developed at the Institute of Administrative Research. This instrument has 51 polarized items which assess elements of "instructional quality." Quality was defined to include four key concepts considered important by professional educators--individualization, group activity, interpersonal regard, and creativity. Short observations yielding quality scores were conducted in a very large number of classrooms. Quality scores were found to increase as class size decreased (Coble, 1968; Olson, 1970). Quality scores were also strongly related to the type of instructional activity taking place. Small group work always generated high scores. Small classes could be judged high quality because they provide an opportunity for more small group activities. Class size was also related to quality scores within some kinds of activities, for instance, the quality of question-and-answer sessions and individual work were judged to increase as class size decreased, especially below a class size of 20 (McCluskey and Smith, 1975).

One limitation to the Teachers College studies is the imprecise and judgmental nature of the "quality" construct. More information is needed about positive and negative instances of the four categories and how they are interrelated, so that the reader can judge whether or not he shares the values that underlie the construct. (See Ryan and Greenfield [1975] for further discussion of this point.) Another problem with this and other research on class size is that it is correlational, based on existing class sizes across a number of school districts. It may be, for instance, that districts with more money support both smaller classes and better teachers or views of education that coincide with the IOQ index. The role of class size itself as a conditioning factor is not clearly specified.

Another major recent study of class size was carried out in Toronto (Wright, Shapson, Eason, and FitzGerald, 1977). This study involved controlled variation in class size and detailed observation and testing for students in grades 4 and 5. In some cases the same teachers could be compared teaching a small class (16 or 23 students) and a large class (30 or 37 students). In smaller classes students were found to have more questions addressed to them individually and to participate more fully in classroom activities. The small classes were also quieter than the large classes. There was some indication that student attitudes might be more positive in the smaller classes. A number of other measures did not show differences associated with class size. No changes were observed, for instance, in teacher verbalization patterns or in the frequency of use of manipulative materials. Some lack of effects may have been due to the quantification procedures used on the observation data. Eight

observations were conducted in each class; and for many variables the measure used was the number of observations in which a particular behavior or characteristic was observed, for instance, the number of observations during which a pupil was observed participating. More sensitive measures could have been developed from such extended observation. Also, the class sizes studied were all relatively large compared to the turning point of 15-20 identified in other studies.

A second meta-analysis of class-size studies was conducted by Smith and Glass (1979). One part of this meta-analysis considered studies of class size and classroom processes. The meta-analysis technique requires combining data from many studies and therefore does not allow fine distinctions among process variables. It does give an indication of the kinds of variables most often studied and of trends in the results for such variables. Three major categories of variables could be distinguished--individualization, student participation, and quality of instruction. For all three categories, smaller classes were associated with more positive processes, especially as class size was reduced below 20. This second meta-analysis also considered studies of class size and student attitudes, with results similar to those for the process measures. A third part looked at studies of class size and teacher satisfaction, as mentioned earlier. A particularly strong relationship was revealed in this case, with smaller classes associated with more positive attitudes throughout the range of class sizes studied.

These class size studies may be placed in perspective by considering other research on effective teaching. Certainly a great number of studies have been done to identify classroom conditions and instructional processes that are associated with greater student learning and other desired outcomes. Perhaps teaching techniques that are effective in a large class are more likely to be used or can be used even more effectively in a smaller class.

One recent study of effective teaching was the Beginning Teacher Evaluation Study--BTES (Fisher, Berliner, Filby, Marliave, Cahen, Dishaw, and Moore, 1978). This study looked at differences in student learning behavior observable in the classroom and related these differences to instructional variables. This approach gives a detailed picture of what happens in classrooms to promote student learning. One aspect of student learning behavior that was examined was student attention to academic tasks. Some students and some classes showed higher rates of attention than others and these differences reflected greater learning. Student attention rates were influenced by the frequency with which the student had contact with the teacher. Students paid attention more often when they spent some time in group work with the teacher or when the teacher monitored more frequently during seatwork. Smaller classes may increase the likelihood of work in small groups or individual contact from the teacher, which may in turn foster greater student attention to tasks. This would be consistent with the findings of the Teachers College group and the Toronto study.

A second student learning behavior investigated in BTES was student success rate. Students who were observed to be more accurate in their work on daily assignments showed greater learning during the year. Accuracy reflects the appropriateness of the match between assigned tasks and student competence. If students are given tasks which they do not understand well enough to work on with reasonable success, they will not learn. The concern for individualization reflects this issue. Studies of class size suggest that the teacher may be able to monitor student performance and assign tasks more appropriately if there are fewer students in the class.

A field study of class size was conducted partly to investigate the application of these concepts to an explanation of class-size effects. The scope and methodology of the study were broadened, however, by the addition of case-study techniques. Much of the research on effective teaching has relied on frequency counts of predefined specific behaviors. Recently, some researchers have discussed the value of other approaches which are more descriptive and which preserve the context of an individual classroom (Doyle, 1976; Fisher and Berliner, 1979; Koehler, 1979; McCutcheon, 1978, 1979; Tikunoff and Ward, 1977). Very little research on class size has been done using a case-study approach. One advantage to a classroom case study is that it allows the researcher to understand more about why a teacher responds in a particular way to the conditions imposed by class size and how class size fits with other conditions which influence the teacher's classroom program.

Methodology

Design and Sample

A variation on a repeated-measures design was used for the study. In each of four second-grade classes, class size was reduced midway through the year by removing one-third of the children in each class to a newly created class. The four classes were studied throughout the year, in both the "large" class and the "small" class phase, so that comparisons could be made.

Two schools participated, with two second-grade classes in each school. One school was in rural Virginia; the other was an inner-city school in California. In the Virginia school, class size began at 20 and was reduced to 13 during the second week in January. In the California school, class size began at 35 and was reduced to 22 at the end of January. The original plan had been to reduce class size in the California school around March 1, but a sudden acceleration in plans was required by the district due to the excessively large size of the classes (35).

Virginia site. The Virginia school is a brick building at the edge of a woods. Students are collected to this site from a wide area; almost all students ride the bus to school. Busing provided an opportunity for the district to keep classes in this school small (20) because of the perceived greater needs of the children including a number of mainstreamed children. Of the 180 children in the school in grades K-4, 65% are Black and 35% are Caucasian. Slightly over half of the children receive free school lunch. Most of the families who send their children to the school have lived in the area for several generations. In this small and remote school, the school principal is an active figure. She knows each of the students; she sees what goes on in each of the classes; she is also active in promoting community relations. A single textbook series in each subject is provided by the district; all classes follow a common schedule, determined by the principal. During reading and mathematics periods, students are relocated from their home rooms to form "homogeneous" groups. Within this setting, two teachers participated in the study. Both these teachers, white females, were from the local area and had a few years teaching experience.

California site. The California school is a large building in an area of urban renewal. The school has funding from several federal and state programs which provides a full-time instructional aide in each primary classroom and other support staff including a librarian and a math resource teacher. There are 400 students in the school from nursery school through grade six. About 99% of the students are Black and almost all receive free or partially-paid school lunch. The transciency rate is about 30% a year. A new principal came to the school two years earlier. He has been instrumental in increasing order in the school and is very attentive to community relations. There is a district policy of open enrollment

and about 15% of the students come by choice to this school from outside the neighborhood. The primary classes are on a "split" schedule, with half of each class arriving at 9 o'clock and leaving at 2 while the other half arrives at 10 and leaves at 3. The time when half the class is present is used for reading instruction. The two teachers participating in the study are both female, one Black and one Caucasian. Both come from outside the district but have been teaching in the district for over 10 years.

Assignment of Students to the New Class

Decisions had to be made at each school about how to assign pupils to the new class created in January. Decisions were made collaboratively by the researchers, teachers, and principal. Student assignments were basically random within general achievement strata, so that the range of student achievement levels remained the same before and after the split. An exception to this procedure was the reassignment of students to the homogeneous reading and math classes in the Virginia school. Because the students were now divided into three instead of two classes, the range in each class was reduced. In all cases, consideration was made of students who would be unduly disturbed by a change of teachers and classes. A few children for whom the move might be harmful were purposely retained in their original classes.

Collecting Information

Many different methods were used to collect information about the nature of instruction in each class and the changes that took place when the class size was reduced. An attempt was made to create a team approach in which both the researchers and the teachers contributed questions, observations and ideas.

Naturalistic observation. The researchers spent time in each classroom observing the instructional process and making detailed notes about what they had observed. Themes for observation were determined in part by meetings between the researchers from the two sites at which questions about instruction and about possible class size effects were generated. Discussions also took place throughout the year and new questions and insights were shared. Observation took place in each classroom an average of one half-day a week. One observer from each site was the primary observer for each classroom, but other members of the team from both sites visited the classroom to provide additional perspectives.

Predefined, quantitative observation. In addition to the wide-ranging naturalistic observation, more formal, quantitative recording of behavior in some predetermined categories was carried out. One observation instrument focused on student attention and on student interaction with other people. Observations were done on target students and on the class as a whole. The procedures were adapted from those developed in the Beginning Teacher Evaluation Study (Marliave, Fisher, Filby, Dishaw, 1979). A modified Flanders system was also used in the Virginia school because of an emerging

interest in documenting the frequency of different types of teacher talk.

Teacher journals. Throughout the year each teacher kept a journal of her experiences. During the large class phase, the teacher described what she would like to be able to do in a smaller class. During the small class phase, the teacher reported on changes that she had made or changes that she noticed in the students or in the way the class was going.

Interviews. Some information was collected through semi-formal interviews with the teachers and with the principal. Interviews with the teachers covered such topics as the progress of target students or teacher reactions to the collaborative research process. Interviews with the principal were a source of information about the school, school programs, and the community in which the school was located.

Collaboration with Teachers

Throughout the project the teachers were viewed as an integral part of the staff. The researchers tried to convey to the teachers that everyone would be collecting evidence about the effects of class size. The teachers' observations were important because they were in the classes every day and could place events in perspective in a way that the researchers could not. The teachers' plans and observations were communicated primarily through their journals but also through conversation with the researchers. Informal discussion took place on each observation day. Regular meetings were also held for the teacher-researcher teams. These meetings were usually held at the school and were relatively short, i.e., over the lunch period. One or two times during the year a release day was provided so that the team could get together for an entire day away from the school grounds.

Assistance to teachers. The general approach taken in this study was to encourage the teachers to take advantage of the smaller class in whatever ways they considered appropriate. There were no predetermined goals of what should change; no systematic inservice program was provided. The researchers were a resource the teachers could draw on for assistance. One of the researchers in the California site was a teacher educator and he was active in providing demonstration lessons for the two teachers on topics of their interest. In both sites suggestions were made to the teachers in the context of talking about classroom issues which they brought up. Additional materials were also made available to the teachers upon request.

Analysis and Reporting

A detailed case study was written about each of the four classes. An additional case study was written about the new class in one of the two schools. The case study describes what went on in the classroom during the large class phase and during the small

class phase. It is based primarily on the notes taken during naturalistic observation but it also incorporates evidence from the quantitative observation and from the teacher journals. Each case study went through several drafts and was discussed at several joint meetings of the researchers. Discussions and comments enabled us to develop a richer conception of the important features of each classroom and to debate the meaning of the available evidence. Each case study was also reviewed by the teacher from that classroom.

In addition to the case studies, a detailed description of each school site was developed. Changes and lack of changes in the classroom are interpreted within the context of the school and the people involved. Constraints on the teacher are identified and discussed. Conclusions are drawn about class size effects and about the nature of change in school settings.

Results

Each of the 4 classes yielded a complex and distinctive case study. The case studies describe such aspects of classroom life as the physical environment, grouping and instructional activities, how lessons are conducted, classroom management techniques, how teachers monitor and evaluate student work, and the nature of classroom interactions. First the "large" class and then the "small" class are described in each case. Information is also provided about the school site, the community, school policies, and the background of the participants. This descriptive information allows insight into constraints on the teachers which influence their behavior. It is impossible to summarize the results without losing the coherent picture of each classroom. There were, however, some general patterns to the changes that occurred when class size was reduced.

Classroom Management

In general, classroom management seemed easier and was more effective when class size was reduced. In the large classes, teachers commented that they spent more time disciplining and less time teaching than they would like. They were usually either dealing with or anticipating student disruptive behavior. Some teachers used seating patterns to control student behavior. They either separated disruptive students in the regular seating plan or moved students away from the group when necessary. The teachers commented that with a large class it was hard to keep students separated. There were "not enough corners." When students lined up to come in from recess, the students at the end of the long line often straggled behind talking or getting into fights.

Several kinds of evidence indicate that the classes functioned more smoothly when class size was reduced. Some evidence comes from observation; some from teacher reports and impressions.

Student attention rates were generally higher in the smaller classes. In the Virginia site, students paid attention to the academic task an average of 56% of the time during reading and math periods in the large class phase. In the small classes, this figure rose to 72%. This increase in attention was accompanied by a decrease in time spent waiting for help or misbehaving. Comparable data are not available from the California site because the sudden acceleration in the split date made it impossible to gather enough data in the large-class phase for reliable estimates. Impressions from observation suggest a similar pattern. In addition, one California teacher reported that all students were more likely to become actively involved during lessons in the small class.

There is some indication that students were absent less often in the small class. One California teacher noticed this effect and looked

up absence data from the previous year as an additional comparison. Absences from February through April in the small class were less frequent than January in the large class and less frequent than during February through April of the previous year.

Teachers also reported anecdotal evidence. They perceived that fewer discipline problems occurred in the classroom and in lines when class size was reduced. They reported on lessons or events which had been more successful than they would expect such lessons to be from their experience with a large class.

> "We had an oral speaking unit where each child was to give a short talk to the class. I had only planned for half the group to give their talks this afternoon, but we did them all. The whole class was really interested. They were reminding each other of the 'rules.'"

> "The children performed in an assembly program...The children were nervous about wearing the costumes and yet in the hour before they went on the stage, they were very calm. This is unusual with a large class size."

There are probably several reasons why classroom management was easier and more effective in the small class. Teachers were able to monitor student activities more closely in the small class. Kounin (1970) identified the importance of teacher "withitness," the sense that the teacher has eyes in the back of her head and knows what is going on in the classroom. With fewer students to monitor, the teacher can be more aware of what each of the remaining students is doing. Students had more chances to participate individually during group lessons. They had more frequent contact with the teacher during seatwork. This pattern is discussed in more detail in the section on individualization.

The fact that there was physically more space was probably beneficial. Teachers commented that there was more space to spread people out. Children who needed time to themselves could be given a quiet space. The teacher could move around the room more easily.

The teachers' positive feelings probably both resulted from and contributed to the improvement in classroom management. Doyle (1977, 1979) has written about the complexity of the classroom environment and the effect that this has on teachers. Many things are going on at once and the teacher must stay on top of it all. In the large class, teachers knew that there was more going on than they could attend to. They felt the pressure of being "withit." They knew students were waiting for help and they could not get there. They felt overloaded with information and demands on their time. In the small class, this overload was diminished. The teachers were able to relax more and felt more positive about the class. In consequence, they probably appeared less angry and frustrated with the students. Their anger and frustration in the large class may have contributed to

student disruptiveness (Kounin, 1970), while their greater calmness in the small class helped set a more positive tone. This difference may contribute to the mental health of both students and teachers.

Curriculum

In the Virginia school, the curriculum was strongly influenced by district mandates and by school-level scheduling and planning. Both the reading and the mathematics series were mandated by the district. Moreover, promotion at the end of the year depended on completing a specified level in the reading series. In addition, few supplementary materials were available in the classroom. Perhaps for these reasons, there were no changes in the reading or mathematics curriculum per se.

Two changes occurred in the way the reading and mathematics curricula were implemented. One teacher had been spending most of her time during reading giving assessment tests for the skills program. With fewer students, she was able to spend some time each day directing group lessons with oral and silent reading, comprehension, and phonics application. Group oral reading had previously been handled in a less competent fashion by a parent volunteer. The second change occurred for both teachers and in both reading and mathematics. Lessons proceeded more smoothly so they could cover the material more quickly. One teacher reviewing her lesson plans found that in November the students were "usually getting through with only one workbook page" per day in math. A similar survey after the class size reduction showed that students were "getting done an average of two pages a day in the workbook."[2]

Several curriculum areas were added to the schedule in the Virginia school after the class size was reduced. The three second-grade teachers and the principal met around the time of the class split to discuss new possibilities. It is an established pattern in the school for children to move from one room to another for specific instruction. For reading and mathematics periods, students are relocated to form "homogeneous" groups. With a new teacher available, the opportunity arose to set up three instructional programs to fit three half-hour time blocks in the afternoon. Each teacher chose a subject to cover--one used the Peabody language program, one used the DUSO guidance and social development program, one taught science. Each teacher taught the day's lesson to each of the three classes, one after the other.

Another, more informal, addition also took place. The half-hour before lunch was scheduled for cleaning up, bathroom trips and washing hands in preparation for lunch. These activities took less time with fewer children to wait their turns, so one teacher began to use the extra minutes to read poetry to the children. This time was informal and friendly and was enjoyed by both students and teacher as a welcome break from the drill and routine.

In the California school, changes in curriculum were specific to the individual classroom. As in Virginia, teachers were not free to

select reading and mathematics textbooks; these were established school-wide. It was generally understood, however, that these textbooks should be used most of the time but could be supplemented with other materials and activities.

One teacher set aside one day a week for Station Day. On this day, the students spent the reading period working in learning stations on instructional games and reinforcement activities. Students spent 20 minutes at one station then moved to a different one. The teacher and the aide usually each directed and supervised a station, for instance, by calling off words for a bingo game. This kind of arrangement was more feasible for this teacher in a small class (10 or 11 students during reading). Students could be divided into small working groups appropriate for the particular games and activities. Previously the groups would have been too large or too many different groups would have been required. The group structure was more manageable in a small class. Also the teacher was more comfortable with allowing the informality and excitement of small-group games with fewer students and less chance of disciplinary problems.

The second teacher expanded several aspects of her program. In the afternoon reading period, the grouping structure shifted. Instead of two separate groups, the teacher arranged one group with subdivisions. All students received the basic phonics lesson and reading in the text. Some students then worked with the aide for extra practice reading the day's story while the other students worked with the teacher on extended comprehension activities designed to develop more fully the meaning of the story.

This teacher also believed in the importance of creative writing and in integrating writing with other activities. Walking trips in the neighborhood and field trips were more feasible and therefore more frequent with a small class and afforded an opportunity for firsthand experience which could be expanded in classroom lessons and writing activities. The class made several field trips, including one to a state beach. The teacher says,

> "The trip is impossible to make with 35 children. The group has to be small to see and hear what the naturalist talks about."

Creative writing activities themselves were more successful and more frequent in the small class. The teacher was able to provide help and support so that even students in the low group succeeded in writing stories. The teacher reported doing more creative writing than she had been able to in previous years or than she has done since then.

This teacher was also able to allow more free access to hands-on material in the science center with a small class.

> "With 35 students I couldn't allow that type of activity to go on because it invariably ends in a mess and arguments and fights."

Other changes in this class concerned the degree of individualization rather than the type of curriculum and are discussed in the next section.

In general, across classes, the basic reading and mathematics curricula in these classes were already established and remained constant. With fewer students, however, teachers were able to spend more time personally on specific parts of the program. They could go into greater depth, for instance in discussing stories or planning extended comprehension activities. They could sometimes cover material more quickly, for instance in the mathematics workbook. They also provided more enrichment activities such as games, poetry, or field trips. Often these enrichment activities were more informal or involved more active student participation than the paper-and-pencil tasks that were common in the large class.

Individualization

A common belief is that smaller classes provide an opportunity for greater individualization of instruction. In the Toronto study, teacher expectations about small classes most often emphasized individualization (Wright, et al, 1977). Individualization was also an area for synthesizing results in the meta-analysis. The term "individualization," however, can mean many different things. In the field study, we found increased occurrence of some types of individualization. Other types of individualization were less likely to change.

In all classes, some time was spent in seatwork, when students worked on assignments and the teacher monitored their work. With fewer students, the teacher could spend more time with each individual student. Teachers were able to provide help and feedback more promptly. Less student time was lost waiting for directions or waiting to have papers checked. The teacher was better able to provide encouragement and support to a student attempting a difficult task.

> "Since the class has been made smaller, I now have time to observe more closely and to give more individual attention to the needs of pupils day by day."

> "Occasionally Randy withdraws and does not do the lesson...Usually that's because it's something he's not very secure with...I can go over, talk to him, work with him, and assure him that I haven't assigned anything that he's not capable of doing--then he gets in and he does it."

Some teachers also found more time for informal conversations with individual students. Sometimes these conversations were about what students did at home. Sometimes they were related to school behavior. One teacher commented:

> "I know the kids better. I have time to pull them to the side and say 'Did you have breakfast this

morning?'...My counseling times have become more frequent. I have more time to spend with Sidney talking about both positive and negative aspects of his behavior."

Individualization can also be defined in terms of curriculum. In some programs, different tasks are assigned to different students depending on their skill levels and/or interests. Grouping students for instruction represents a greater degree of individualization than whole class instruction. All four classes used small-group instruction throughout the year. This group structure rarely changed when class size was reduced. Teachers did feel that they could plan instruction more appropriately for each group.

> "Now I can walk around the room, get to everybody, and find out what I need to plan for the next day and that's most helpful to me. (I can) see if they have done what I have asked them to do and where they made errors and what step do I need to take next to correct the errors. Should I go over this lesson again, should I plan something completely different getting over the same point in a different way?"

One teacher, but only one of the four, supplemented group lessons with more individualized assignments. When class size was reduced, this teacher created an individual work folder for each student. Students could do work from these folders when they had finished other assignments. With a larger class, the teacher did not feel she could keep up with these folders. This teacher also encouraged the students to work on other activities when a regular assignment was finished. With fewer students she was able to offer more options, for instance, she could get out supplementary dictionary materials for a few students who quickly mastered a basic language lesson.

Teacher Reactions

Teachers felt favorable about the reduction in class size. Because discipline seemed easier, teachers were more relaxed. One teacher commented:

> "There's more of me left at the end of the day."

Teachers also felt good about what they were able to do, for instance, about being able to spend time with individual children. They commented on the progress different students had made.

Discussion

For all four teachers, changes took place when class size was reduced. Two kinds of changes generally occurred in all four classes, although specific instances varied from one class to another: 1) classroom management seemed easier and was more effective; 2) teachers could spend more time with each individual student and thus felt they knew more about how each student was performing. Changes in curriculum also occurred, although these varied more from one class to another. Most changes could be described as enrichment of the curriculum: one teacher added more instructional games; another introduced poetry; a third made more individualized supplementary assignments. Within the basic reading and mathematics curriculum, some teachers found that students completed lessons more quickly so they progressed through the curriculum more quickly. Other teachers developed lessons in greater depth.

It is important to note that these changes were not necessarily caused by the class size reduction. In this design, the small class always came later in the year, when second-graders have attained more maturity and teachers have had more time to establish effective class-classroom routines. Moreover, teachers were encouraged to take advantage of the small class and thus put some energy into making changes. They also experienced the relief of a sudden reduction in class size, which increased their enthusiasm. As teachers became acclimated to a new class size, they might make fewer changes. "Large" and "small" are relative concepts, and some teachers accomplish more than others in any given class-size.

Some counterarguments can be made to these alternative explanations. In BTES, student attention rates were measured throughout the year from October to May for second and fifth grade students. There was no overall change in attention rates from the first half of the year to the second half (Filby and Cahen, 1978). This suggests that neither student maturity nor teacher routine-setting leads to greater student attention as the year progresses. Instead, classroom behavior patterns tend to be established fairly early in the year (Anderson and Evertson, 1978).

In response to the second argument about teacher enthusiasm, the nature of the changes must be considered. None of the changes reflected major additional effort on the part of the teacher. Rather, it seemed that easing the constraint of class size allowed the teacher to do more and better what she was already inclined to do. In fact, this is an important point worthy of further discussion.

Most of the changes that occurred could be described as modifications or improvements within the teacher's existing style and plan of instruction. Teachers did not change their basic approach to classroom management or to the curriculum. They were, however, able to do more or better what they already intended. For example, teachers perceived many students in the large class who needed more individual

help. In the small class, they were able to spend more time with these individuals.

One could imagine other, broader changes that could take place. No teacher really individualized the curriculum. Groups of different sizes were the basic organizational unit. Some teachers provided supplementary individual work but to a limited degree. One teacher talked about preparing individual learning packets in math but did not do so. Complete individualization may not be either possible or desirable, but it is interesting to note that teachers welcomed the small class as a chance to "attend to individual needs" through teacher help and feedback during seatwork. They did not extend their concern for individual needs to an individualization of task assignments, even in the smaller classes.

Other possible changes can also be imagined. Only one teacher tended to include activities that integrated different subject areas. There were few opportunities for student choice of activities. Teachers still tended to evaluate student work through brief written symbols and brief verbal comments, rather than more extended personal discussions of progress.

The lack of major changes calls attention to the complex, social reality of teaching and to the requirements for producing major change in such a system. The teachers began the year with an established style of teaching based on their beliefs and experiences. They faced constraints imposed by the district, for instance, in Virginia the reading and math curriculum series were mandated by the district and promotion of students to the next grade was dependent on reaching a particular level in the reading series. The teachers also faced constraints at the school level. The daily schedule was largely fixed. In California, the morning instructional time was shortened to accommodate lunch in the classroom as part of the Follow Through program. In Virginia, there was no free-play recess time. Also, because students in the Virginia school were regrouped across classes for reading and math the teachers had less opportunity to develop integrated lessons.

Some school level constraints appeared to function as unwritten policy, at least in the mind of the teacher. In Virginia the principal emphasized orderliness, as seen in the topics discussed in staff meetings. The teachers, in turn, felt it was very important to maintain quiet and control in the classroom. They assigned written work so the students would "always have something they're supposed to be doing." Individualized assignments, while seen as desirable, may be in conflict with this need for order. At least, the risk of disorder in a new situation, combined with the work involved to set up a new program, may keep the teacher from trying such an approach.

To accomplish major changes in such a setting, more is needed than a five-month reduction in class size. The five-month time period itself is very short. Classroom routines have already been established. There is a limited time to plan new approaches and the children would have to adapt to any new procedures that were introduced.

One teacher expressed the view that:

> "The kids expect a routine... If you came in one morning and all of a sudden changed, I don't think they'd know what to do. They need that order."

Also, the teacher would have to become committed to making major changes and would have to believe them both desirable and possible within the situation. What teachers do depends largely on their own beliefs about teaching and on the skills they have acquired. To try a different approach, the teacher must come to accept its value and must be trained in any new procedures. Changes take place slowly and require systematic training procedures. (See Hall, Wallace and Dossett, 1973; Freiberg, Townsend and Buckley, 1979.)

For those who desire major changes in education in general or in a particular teacher, class size is not the whole answer. Clear differences exist between teachers in style and effectiveness. Small classes do not eliminate these differences or bring major changes in educational approach. Small classes do give the teacher a chance to implement an approach more fully and more effectively.

Footnotes

1. The meta-analysis is described in Cahen and Filby (1979). This article also discusses related literature and implications.

2. It is worth noting that the teacher who reported this difference taught the low math group. In fact, whichever ability group was involved, the teacher appeared to be able to move through the curriculum more quickly.

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